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SUMMARIES OF ARTICLES.

[ABBREVIATIONS. — *Am. J. Ps.* = *American Journal of Psychology*; *Ar. f. G. Ph.* = *Archiv für Geschichte der Philosophie*; *Int. J. E.* = *International Journal of Ethics*; *Phil. Mon.* = *Philosophische Monatshefte*; *Phil. Stud.* = *Philosophische Studien*; *Rev. Ph.* = *Revue Philosophique*; *R. I. d. Fil.* = *Rivista Italiana di Filosofia*; *V. f. w. Ph.* = *Vierteljahrschrift für wissenschaftliche Philosophie*; *Z. f. Ph.* = *Zeitschrift für Philosophie und philosophische Kritik*; *Z. f. Ps. u. Phys. d. Sinn.* = *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*; *Phil. Jahr.* = *Philosophisches Jahrbuch*; *Rev. de Mét.* = *Revue de Métaphysique et Morale*. — Other titles are self-explanatory.]

LOGICAL.

Sur les idées générales. G. MARCHESINI. Rev. Phil., XVIII, 5, pp. 489–498.

An idea is a sensation which has left a mental residue susceptible of elaboration. The logical distinction between the two falls within a process of which each stage depends on the preceding, and by which the most abstract notion is indissolubly connected with concrete existence. General ideas in the strict sense, *i. e.*, in and by themselves, do not exist. Abstract and concrete are relative terms, an idea being abstract in so far as the sensations whence it is derived are not immediately given. The ambiguity involved in the conception of general ideas is due to a false separation between subjective and objective, as if either could exist without the other. The universal is not an *a priori* form distinct from the given material; it is the logical function of sensation itself, and varies with the psychological character and mental development of the individual. The mark which always distinguishes it, is its indefinite applicability. Sensation itself is always implicitly general, since it can be separated from the 'this' and 'now' and logically combined. Ideality being thus a fundamental and essential quality of mental phenomena, it is not improper for psychological monism to take a logical direction in the analysis of psychological processes.

L. HANNUM.

PSYCHOLOGICAL.

Die Farbenempfindung im indirecten Sehen. I. A. KIRSCHMANN. Phil. Stud., VIII, 4, pp. 592–614.

The author states the results of this first part of his investigation as follows: (1) For the continuous perception of a saturated color, there is necessary, in accordance with the Law of Relativity, the simultaneous presence of other colors, or at least that of colorless light. (2) The perception of colored surfaces in a completely darkened visual field is exceptional, and can only conditionally be employed in the determination of the functions of the excentric retina. (3) There is as little coincidence of the spheres of perception of red and green, or of purple and green, in indirect vision, as there is of those of blue and yellow. This fact speaks decisively against Hering's hypothesis. The further fact, that the sensation-circle of blue is the largest, that of violet the smallest, while the limits of the perception of red or purple lie between those of blue and violet perception, accords neither with the theory of Hering nor with that of Helmholtz. (4) The peripheral retina functions quite differently in different directions from the centre. (5) All the color-spheres extend further in the nasal and upper portions of the retina than in the temporal and lower parts. The yellow-sphere alone has a greater extension in the latter regions, in the case of small stimulus-objects. (6) The yellow and orange zones are not coincident throughout. The former color claims more of the temporal, the latter more of the nasal retina. (7) Color-sensations, in indirect vision, are to some extent dependent on the magnitude of the colored surfaces. In the case of the lower and temporal retina, the different zones of sensibility are not greatly extended by increase in the size of the objects; for the upper and nasal portions of the retina, on the other hand, the possible displacement of boundary due to such increase appears to be unlimited. (8) Total and partial color-blindness are referrible, on Wundt's theory, to a deficient differentiation of the scale of chromatic sensation, corresponding physically to a divergent constitution of the visual substance. The modifications of sensation in indirect vision, which depend on extension and position in the visual field, are probably only the expression of a necessary alteration of function in the peripheral retina, the reason for which we cannot at present state in full. (9) The resemblance existing between partial color-blindness and the color-sensation of indirect vision is quite superficial.

E. B. T.

Die statischen Functionen des Ohrlabyrinthes und ihre Beziehungen zu den Raumempfindungen. I. R. WLASSAK. V. f. w. Ph., XVI, 4, pp. 385-403.

(1) *The physiological facts.* The literature begins with the experiments of Flourens (1824) on pigeons. Not till 1870 were the semicircular canals expressly claimed for the sense of bodily equilibrium (Goltz). Verworn has shown how the otolith apparatus functions in the Ctenophores. Such an apparatus is the primitive form of the static sense-organ. In the higher animals we find more complex conditions : they are symmetrically built, and so require a two-fold organ; they possess the eye, which is practically absent in the Ctenophores; their static sense-organ has two parts, — the otolith apparatus, for progressive movement, and the canals, for rotatory movement. (*Cf.* Mach, Breuer.) A frog whose otolith apparatus and labyrinth have been unilaterally extirpated, assumes an associatedly asymmetrical position (Ewald, Loeb). This asymmetry is intelligible from the analogy of the Ctenophores. The activity of both organs is necessary to the equilibrium of the animal ; its deprivation of one conditions a disturbance of the antagonists (flexors and extensors). If both organs are excised, there is no asymmetry, but the animal is dull, remains long on its back, if placed in that position, and in water sinks, or swims uncoördinately. A pigeon which has undergone the operation cannot fly, cannot at first feed itself, cannot surmount obstacles, etc. Dogs similarly operated upon are unable to execute complicated muscular movements. Again, the Ctenophores help us to an explanation. Innervation is not asymmetrical, as in the former case, but it is generally inexact.

The difference of function obtaining for otolith apparatus and canals is clearly proved by Ewald's experiments with his pneumatic hammer. Interesting are the phenomena of giddiness shown by the uninjured animal, when rotated round the vertical axis. If a pigeon be thus rotated, we get symptoms of head-nystagmus (Breuer). If the movement suddenly cease, after the disappearance of these symptoms, the animal exhibits an after-giddiness. So with rotation round the horizontal axis ; the giddiness-response to the rotation is here vertical, as it was in the former case horizontal. Experiments *per exclusionem* point to the excitation of one pair of canals in each instance. We are thus led to the explanation of Flourens' results : the movement-components lying in the plane of the uninjured canals can be compensated, the component lying in the plane of the injured canal cannot be so compensated, — and therefore the pendulum-like motion of the head continues. The relation of the labyrinth to the ocular movement-apparatus has been discussed by Breuer. The eye-movements are different when the head is held upright and rotated round the vertical axis, when it is vertically inclined, and when it is inclined to right or left. In rotatory giddiness occurs an ocular nystagmus, which is analogous to the head-nystagmus. Here we are dealing with compensatory movements; in the case of head-nystagmus with a permanent change of position. The former are to be referred to the otolith apparatus, the latter to the canals, as can be experimentally and pathologically demonstrated (Kreidl). These facts are to be harmonized with our initial view, that the labyrinth is the organ of conservation of symmetrical muscular innervation. We may expect similar laws to hold for the eye as for the skeletal muscles, which regulate the position of the general sensory surface of the body. Indeed, all the facts are explained, if we suppose that, with change of position of body or head, the labyrinth so functions that "the visual plane seeks to retain its perpendicularity to the axis of the body, and the line of bisection of the angle of the lines of sight its coincidence with the median plane of the head." It is in this line that we see objects, monocularly and binocularly alike. — Thus, the movements due to the labyrinth bring about an equilibrium, as it were, within the organism. Disturbance of the labyrinth implies other kinds of muscular inability also. Ewald explains this fact by the hypothesis, that the muscle-groups connected with it through the medium of the central organ are influenced as regards their tonus. When we say, then, that the labyrinth looks to symmetrical muscular innervation, we mean the innervation of all the cross-striated muscles. We may conceive of the total mechanism as follows. In either half of the central nervous system we find a correlation of the centrifugal paths for the antagonist-pairs. This correlation renders symmetrical movements possible. The mechanism can be set in motion by labyrinth-excitations, at some point of the mid-brain or (perhaps) medulla. That the mechanism is present in sections of the brain which lie higher than this point, means, physiologically, that either other centripetal excitations or exclusively-central processes can affect it.

E. B. T.

The 'New' Psychology and Automatism. ANDREW SETH. Contemporary Review, April, 1893, pp. 555-74.

In denying the soul and limiting itself to the concomitance of physical and psychical events, the 'new' Psychology starts with a definite theory which determines the results beforehand. Münsterberg, who gives the clearest statement of these results, emphasizes the dynamic aspect of ideas so as to eliminate altogether the notion of activity. There is first the idea of the movement as in contemplation, then the perception of the movement as executed. Ideas are thus active entities independent of the subject, the recognition of which becomes an empty acknowledgment. This view is due fundamentally to the standpoint of Phenomenalism or Intellectualism, more precisely to two Psychological presuppositions which are arbitrarily assumed: (1) that all psychical phenomena are reducible to sensations, (2) that the will is a phenomenon. Münsterberg inconsistently admits that every sensation has a 'tone' of feeling, and further that this element has no material counterpart (despite his contention that all conscious phenomena are materially conditioned). Feeling certainly cannot be phenomenalized, for it is the attitude of the subject to a given stimulus. We *experience* feeling, and *know about* it by its results — 'experience' being in this connection a wider term than 'knowledge.' Feeling furnishes the driving power of all life, and all actions are originally feeling-prompted. To deny this, even in the case of the lowest organisms, is to forget that where there is life there is unity, and that feeling is the inward expression of this unity. In ignoring these facts the 'modern' Psychologist goes further than the extreme Physiologist. If the talk about 'nervous currents' and 'paths of least resistance' is to be taken as a literal explanation, man is reduced simply to a network of pathways, through which the energy of external nature soaks in and oozes out again. That the nervous system does act as a unity is sufficiently proved by the unity of consciousness. As with feeling so *mutatis mutandis* with volition. Feeling is constituted by relation to the subject; volition is the action of the subject. Volition, like Feeling, can be *experienced*, but to seek to know it as a phenomenon is to seek to know it as it is *not*. An investigation founded on this assumption is a mere *petitio principii*.

DAVID IRONS.

ETHICAL.

Unreasonable Action. Prof. H. Sidgwick. Mind, No. 6, pp. 174–187.

A psychological examination is necessary to determine by reflective observation what happens when a sane person acts consciously against his sounder judgment. The very existence of unreasonable action is not sufficiently recognized by influential ethical writers. Bentham, Mill, and Green leave little room for subjective irrationality. But it is so clearly a part of common experience that to reject it seems paradoxical. The present examination was conducted under the usual difficulties of introspection, yet the following result was reached: A *clear* consciousness that an act ought not to be done, accompanied by a voluntary determination to do it, is a comparatively rare phenomenon. The other cases are those in which the consciousness of the unreasonableness of the action is present, either (1) not at all at the moment of willing, or (2) only obscurely. The former heading includes acts which violate a generally accepted rule, but which have been willed without an application of the rule. In such cases the rule is often simply forgotten, temporarily excluded from memory by impulse. More often the rule is remembered, but the correct conclusion is not drawn on account of some seductive feeling, which causes the agent either to suspend his rule from a temporary conviction, that it was unwisely adopted, or to persuade himself that it is not applicable to the case before him. The second heading covers cases in which the agent is dimly aware of his sophistry. He gladly embraces any sort of casuistical or fallacious argument which seems to make against the course pointed out by reason. Sometimes the fallacy results from the direction of attention to certain aspects of the subject, and away from others, as in the case of the vain man who refrains from considering his shortcomings. Undisguised wilfulness is rare, occurring rather in failure to perform a duty than in positive wrong action. For positive wrong action, some process seems necessary which shall set aside the opposing judgment.

E. L. Hinman.

La sociabilité et la morale chez les animaux. F. HOUSSAY. Rev. Phil., XVIII, 5, pp. 471–488.

Although natural selection is rather a result than a cause of evolution, it is none the less interesting to determine *a posteriori* what qualities of a species are connected with survival. One characteristic, which appears to exist in direct ratio to superiority and prosperity among animal races, is the aptitude for social life. This is exemplified by man, ants, beavers, monkeys, cattle, and many other species, which never yield to the most terrible enemies unless these possess a superior social organization. The habit of living with others is usually beneficial even to subject races, although sometimes the balance of benefits is lost, *e.g.*, in slavery among men and ants. Sociability is connected with special qualities which may be called moral. The most rudimentary of these is the tendency to give assistance in turn, as when the sentinels of a herd watch while the rest graze. In its lower forms, service receives speedy recompense; in the more developed phases, the reward is delayed and sometimes renounced altogether, as when life is sacrificed for others. When self-sacrifice becomes not only an hereditary instinct, but a recognized condition of welfare, the individual is born into a moral world, and, profiting by all the previous work of society, is thus invested with duties from the outset. This state is most complete in the human species, where the struggle for life necessary to every animal race assumes a form which disengages the individual as much as possible.

In the perpetuation of variations and the development of species, sexual selection, though secondary, is highly important. But it is not true that the instincts serving the formation and conservation of the family constitute the basis of society. Among the lower animals, the social and family instincts exist in inverse ratio, and are gratified alternately; among men, they are either kept separate as in the East, or conciliated by a series of compromises, as in the more complex civilization of the western nations. When the sexual instinct is lost, as among the bees, communal life appears to be much more perfect than with ourselves, labor and its benefits being nearly equally apportioned. Such a life has existed among men only in communities practically monosexual, and natural history indicates that the price of socialism is likely to be the destruction of the family, which is a much more serious enemy to communism than are the interests of the individual as such.

L. HANNUM.

Freedom: its Relation to the Proof of Determinism. SIDNEY E. MEEZES. Int. J. E., III, 3, pp. 366–381.

Brushing formal logic aside as of comparatively slight assistance, two types of proof remain: (1) proof by induction, and (2) proof from presupposition. It is impossible either to prove or to disprove freedom by induction. Scientists employing this method can only discover 'laws of nature'; they know nothing about the 'efficiency' of a cause to produce its effect. Both 'compelling' and 'compulsion' are emotions, and it will not do to attribute them to nature. The ordinary indeterminist idea of the operation of motives is absurd. To establish freedom, it is necessary to show that at some point there is no definite order of sequence. But this cannot be done by induction. The proof would have to be one from ignorance, which might be overthrown by the discovery of unobserved antecedents. But it is equally impossible to disprove freedom by induction. Even if the ideal of science were realized, freedom would not be disproved. Predictability does not do away with spontaneity. The reality or illusoriness of freedom must be decided on other grounds. Whatever is necessary in order to the possibility of becoming acquainted with, or getting access to, truth, scientific or other, must *a fortiori* be itself true. If freedom be such a prerequisite, and if, further, the process of truth-getting can be shown to be an activity essentially similar to some of the practical activities, then surely the reality of freedom can be accepted as proven. But such is really the case. Deliberation and choice are the essential elements in all decisions, practical, æsthetic, or theoretic, and in all three types these elements are essentially the same. The truth-getting activity involves as a necessary part of itself teleological judgments the same in type as those involved in moral or æsthetic decision. But the worth of a teleological judgment depends upon the worth of the conscious being making it. 'Facts' cannot 'speak.' Squirm how we will, in the last resort authority, our own or that of another accepted by our own, is the basis on which all that is true for us rests. The Practical Reason has the primacy. We cannot think, any more than we can act, without the postulate of freedom.

E. A.

The Superstition of Necessity. J. DEWEY. Monist, III, 3, pp. 362–379.

The thesis to be made good in this article is, that the idea of necessity is a survival from an earlier and undeveloped period of knowledge, having reference solely to the development of judgment, not to things or events. Science ultimately gives just a complete statement of reality ; and in doing so we do not say that a fact *must* be such and such, but simply that it *is* such and such. Of course, in describing the whole, we state the elements that enter into and make up the whole, but they do not *cause* it. The fallacy of the necessitarian theory consists in transforming the determinate in the sense of the wholly defined into the determined in the sense of something externally made to be what it is. The whole, although first in the order of reality, is last in the order of knowledge. We at first abstract from the concrete fact the part that is of most practical importance to us and set this part up as *the* fact, while the attendant circumstances are regarded as accidental or are entirely ignored. Afterwards experience forces on us the recognition of these circumstances as parts of the whole fact, and the unity of the concrete fact begins to dawn upon us. This passage-way from isolation to unity, denying the former, but not admitting the latter, is necessity or determinism. Necessity is of purely teleological character. So far as our past action is concerned, what is of practical value is abstracted and regarded as the entire fact ; but when our *future* action is considered, this value is an end to be attained, and the conditions which before were regarded as accidental now become means *necessary* to bring about the end. Further, so far as the end is vaguely defined in consciousness, so far the means are contingent, but when the end is made more concrete, the means become necessary ; finally, however, when the end is fully defined, the means constitute its concrete filling and all appearance of necessitation vanishes. The end, including the means, simply is. Logical necessity is just the teleological read backwards. The logical process of discovering and stating the reality of some event simply reverses the process which the mind goes through in setting up and realizing the end. In the one case we look for the cause of a given effect ; in the other for the means to a represented end. In either case the separation of the two sides, of cause from effect, means from end, has its origin in the practical needs of our nature, and that separation gives way to unity when the real fact is known in its totality.

A. R. HILL.

METAPHYSICAL AND EPISTEMOLOGICAL.

Die moderne Energetik in ihrer Bedeutung für die Erkenntnisskritik (II). K. LASSWITZ. Phil. Mon., XXIX, 3 u. 4, pp. 177–197.

In the work of representing the change of phenomena quantitatively, mathematical physics meets two difficulties from which the transition to the notion of energy offers relief. As mechanical physics knows only mechanical energy and mass as its unit of measure, the first difficulty consists in reducing all the specific forces of nature to the unity of mechanical form. To explain qualitative differences by motions, the complicated molecular and ether-hypotheses were devised, since these motions could be only such as take place below the limit of sense-perception. This solution accepted, the second difficulty arises, how to correlate these purely mechanical events with the qualities of sense reached only in experience. Why is this ether-motion experienced as light, that as heat, etc.? The chief point of the question is, how nature, as magnitude in space, can be objectified without losing its relation to the unity of determination in the subject; *i. e.*, how mechanism is possible without losing completely its connection with the subjective factor. The theory of energy makes easy the conception that it is the unity of law which conditions as well the material phenomenon, the unity of the object, as the unity of the subject. There is no place here for the epistemological error that the ultimate elements in the explanation of nature are sensations as they are given in the senses; but it is clear that the data of sense are qualities which are determined by laws of the understanding. As there is only one energy, which, according to its distribution in space and time, is designated as energy of various forms; so, too, there is only one sensation, whose various qualities are joined to the time-space distribution of energy in our bodies, *i. e.*, to the complex of the organism. Energy is the objectified content of consciousness, *i. e.*, a synthesis, in which the subjective unity of the ego is replaced by the objective unity of the complex. Sensation, subjectively considered, is that change of state of our ego which is localized, and so belongs to the space-time content — an adjustment of energy in relation to the subjective unity of an ego. There is energy only so far as relations of unity take place in time and space through the categories, *i. e.*, as far as the realm of nature extends. In speaking of energy outside the realm of nature, *i. e.*, outside the realm of the categories of quantity, quality, and relation, in their relation to space, we can use only metaphors, to which the concept of energy in physics does not correspond. Energy is only the content objectified by the law of the understanding; but content, *i. e.*, determination by synthesis, is also produced by laws of reason, by teleology, and freedom. Accordingly, we find in energy, not an absolute, but only one of the law-determined formations of consciousness, namely, the condition of all sense-experience. It is the work of epistemology, and not of the science of energy, to reduce the empirical phenomena of energy to merely spatial configurations of energy; but just in so far as the development of natural science approaches this end, the more distinctly emerges the thought that the ultimate individual, the concrete content of nature, is not the sense-given, but that it has objective validity, in so far as it is determined by general laws. In the definite working out and clearing up of such general principles, we see the epistemological significance of the modern science of energy.

F. C. FRENCH.

The Epistemology of Ed. V. Hartmann. W. CALDWELL. Mind, No. 6, pp. 188–207

Hartmann begins from Subjective Idealism. His final theory is Transcendental Realism which teaches that the things that are real are objects outside, or transcending, consciousness. I. He finds the Common Sense view of perception refuted by the facts of science. But we should study the facts of perception in their entirety, *i.e.*, as aspects of an organic function of percipient beings. It will then be seen that not the Common Sense, but the introspective immanent view needs justification. In movement in response to physical stimuli, the percipient has an actual living relation to the larger whole of which its body forms a part. This diffuse organic sense of reality, which gives us a 'that,' but not a 'what,' is the type of perception. From this the specialized perceptions are built up. II. The propositions in which Hartmann states the scientific reputation of naïve Realism are summarized and criticized. It is noted that 'things' do not enter as units into our simplest consciousness, they arise as distinctions in the psychical content parallel to other distinctions drawn in the content of the physical world. The physiological refutation of naïve Realism is discussed. This argues that the world of consciousness and the world of being are different *in toto.*

But this affects not the fact perceived, but only the percipient's interpretation of it. The world we know is one in which psychic or nervous process is attendant on physical process. We can abolish neither. It is valid to predicate my perceptual knowledge of reality, because knowledge itself is a phase of reality. The relation of knowledge to reality is the relation of one kind of reality to another. Hartmann's own doctrine about Perception is summed up in five propositions: (1) What is perceived is one's own conscious content. *Ans.* The psychical is only possible through organic movement, which is the physical basis of perception. (2) Experience cannot decide whether there are 'things-in-themselves.' *Ans.* 'Things' may mean (*a*) things in the ordinary sense; (*b*) the ultimate structural elements of the world. Meaning (*b*) does not exist for sense-perception. (3) Experience cannot decide whether our intention and thought forms are applicable or not to 'things-in-themselves.' *Ans.* If I know only what is within my consciousness, I can never raise this question. (4) The world is my subjective appearance-world built up out of sensations, etc. *Ans.* The first clause confuses the world with my interpretation of it, the second erroneously takes sensations to be the elements out of which experience is built up. (5) Experience cannot say whether there are other worlds outside my subjective appearance world. *Ans.* This only means that the world has many aspects, only a few of which I know. III. Transcendental Idealism having failed to bridge the gulf between the immanent and the transcendent, Hartmann tries to accomplish this it by a transcendent application of the principle of causality. In this way he gets to 'things in themselves.' He shows how the other categories apply to 'things-in-themselves,' *viz.*, unity, plurality, substance, existence, necessity, space, time. He makes the 'thing-in-itself' an "efficacious, unconscious, deaf happening." The two forms of transcendentalism are unreal alternatives. The opposition between immanent and transcendent is a false one. Scientific Realism is the completest theory. There is not for us one, but many related planes of reality. For metaphysic there always remains a dualism in *at least two* planes of reality. Results: (1) Dogmatic Idealism is an *idolon specus.* (2) Common Sensism is only an imperfect, and not a contradictory, account of reality. (3) Realism in the broad sense includes Idealism. "We cannot know things because between us and things there comes the mind" means that we can never know things because, in order to know them, we have got first to know them, *i.e.*, to falsify them.

J. A. LEIGHTON.

The Nature and Aims of Philosophy. H. JONES. Mind, No. 6, pp. 160–173.

Philosophy is the reflective reconstruction of the life of man. It starts with a working hypothesis, not from anything unconditionally valid. A valuable conception as a starting-point is that of human experience as a process of growth. Only potencies, however, are transmitted from age to age, and human experience is born anew and developed in each individual and generation. Every system of philosophy, therefore, which is faithful to its datum, must perish with the life it explains. The continual failure of systematic thought is due to the fact that we can connect parts together, but not wholes. Hence Art and Philosophy must always start afresh, while Science, dealing with incomplete contents, can proceed steadily by aggregation. The synthetic impulse of philosophy is only satisfied when we view the world in the light of self-consciousness, that category which allows the deepest differences within the most intense unity. Philosophy thus seeks to interpret the world by knowing man, and in the nature of self-consciousness we find the explanation at once of the growth of philosophy and the failure of philosophic systems. We see that there can be no final philosophy, yet that the worth of philosophy remains, just as Morality retains its value, though the absolute Good is never realized.

DAVID IRONS.

HISTORICAL.

Le concept du nombre chez les Pythagoriciens et les Éléates. G. MILHAUD. Rev. de Mét., I, 2, pp. 140–156.

The satisfactory explanation of the Pythagorean doctrine, that 'things are numbers,' is found in the ancient commentators. How did the Pythagoreans probably arrive at such a doctrine? Pythagoras was the first mathematician to speculate on the general properties of geometrical figures, and he found that these could be expressed by numerical relations, *e. g.*, the two sides and hypothenuse of a right-angled triangle are numerically expressed: $a^2 + b^2 = c^2$. For him the thought lay near: things which have form or figure, are numbers. The Pythagoreans did not study the properties of number, like ourselves, as abstract symbols, but in the light of figures generated from points. The point was, for them, a unit having position; a line was a series of such points. The need of separating geometrical figures from natural bodies was not felt; the distinction between the domain of pure abstraction and the domain of concrete things was not known. So Pythagoras would have said 'geometrical figures are numbers,' or 'the bodies which fill the universe are numbers.' Further, Pythagoras was the first to institute investigations on the subject of sound. And here, too, he found that number was the determining element; though the ratio of weights suspended from the same length of cord to produce the octave, fifth, and fourth, is not, as stated in the tradition, 2, $\frac{3}{2}$, and $\frac{4}{3}$, but the squares of these, 4, $\frac{9}{4}$, $\frac{16}{9}$. Thus Pythagoras finds number everywhere; in geometrical surfaces and solids, in the movements of the celestial bodies, in the entire mechanism of the universe, and even in the hidden recesses of the soul, in the sensations of harmony, and believing he has found the essence of things, he propounds the doctrine that 'things are numbers.' It is not surprising that the first thinker in discovering a concept of such service for general science, did not himself understand the purely formal and subjective character of it. With him the concept was at once identified with the real. So Descartes says, extension is the essence of material things, things are extension, as Pythagoras had said: things are number. The same idea is expressed in the two formulas. Similarly Newton says that things are 'forces.' In Renouvier's law of determinate number, we find a return to the Pythagorean concept, and to the objectifying of the concept. In Parmenides and Zeno the unity of being is opposed to the Pythagorean plurality. Being is merely extended substance, the object of sense. Its unity implies that the matter of which the universe is composed is continuous; there is no empty space. This unity or continuous Being of Parmenides and Zeno is the extension of Descartes, and it is this Eleatic conception of continuity that is fundamental, though Zeno could not have foreseen this, to the generation of lines and surfaces in geometry, and to differential and integral calculus.

W. H.

Le mouvement et les arguments de Zénon d'Elée. G. NOEL.

Rev. de Mét., I, 2.—pp. 107–125.

The first two arguments of Zeno postulate the infinite divisibility of space, and imply the same of time. The last two postulate indivisibility directly of time, and indirectly of space. The first argument merely shows the impossibility of a passage from repose to movement. The second is supplementary and declares relative and absolute movement to be equally absurd. If the common postulate of both be denied, the second pair of arguments still remains. Hence in either hypothesis as to the nature of space and time, motion is maintained to be impossible. The last two arguments cannot be refuted, but the first pair are founded on an unexpressed postulate which contains the negation of motion — that quantity must be given either as a whole or by successive additions. This forbids the application of the notion of Becoming to magnitudes, and ignores the possibility of a quantity in potentiality, which is gradually and continuously produced. Movement cannot be said to be an illusion of sense. It is a rational construction which cannot be explained by experience, since it explains experience. If it is denied, universal scepticism results. Movement is a Becoming; in itself, it is the continued passage to a new position, the successive changes of position being merely its effects. The number of successive movements, into which Zeno dissolves the total movement, only exists for the mind of an on-looker. The movement in reality is a continuity of such a nature as to exclude division in any form. These arguments are sophisms, but are inevitable unless we undertake a rigid criticism of the principles of our knowledge.

DAVID IRONS.

Metaphysik und Asketik. WILHELM BENDER. Ar. f. G. Ph., VI, 3, pp. 307–331.

Leibniz gives two independent explanations of morality. First, he accounts for it upon psychological and anthropological principles. Secondly, he gives also a metaphysic of ethics, which only refers to the universal forms of morality in abstraction from the actual process in which it is realized. Thus, morality appears as a purely internal matter, which has only to do with the good in itself. With its double relation to man and to God, it necessarily leads to the ascetic striving for personal salvation, and can no longer be distinguished from religion in its mystical, supernatural form.

Kant is a classical example for the correctness of our observation, that the metaphysical explanation of morality leads to aseticism, and that the ascetic practice, which renounces the world and seeks for personal salvation, is based on a metaphysical, transcendental view of morality. In the same way, Fichte's metaphysical explanation of morality combined naturally and necessarily with an asceticism and mysticism which resembled that of the theosophists and neo-Platonists. Hegel escaped the consequences of his professed metaphysic of morals, but his absolute idea contributed nothing towards the explanation of the moral activities, institutions, and goods, which he included in the idea of the State. The same is also true of Schleiermacher; for, apart from some personal considerations, he had no place in his system for a religion which demanded a God without the world, and outside of the world.

J. E. C.

Le problème moral dans la philosophie de Spinoza. V. Delbos. Rev. de Mét., I, 2, pp. 126–139.

The moral problem, as S. conceived it, consists in eliminating those extrinsic conceptions which lead human activity towards transcendent and imaginary objects, in order to discover the intrinsic ideas and absolute truths which give expression to our inmost being and its relations to God. The system by which he sought to solve these problems took the ontological reason as the measure of everything. That which is not founded upon reason, is nothing but an illusion and a negation. The good is not outside of ourselves, but is directly of interest to us. That is true and useful which sustains and completes life ; that is false and injurious which cripples and lessens it. Spinoza's system is idealistic, as is seen from his definition of *causa sui;* but it differs from former systems of idealism by the different mode in which he understands the divine thought. It is an Infinite which, instead of thinking itself eternally, produces other beings as their efficient and immanent cause. It is not a universal notion, but an individual ; and that which is from the beginning present to it are individuals and their relations. S. seeks to free moral philosophy from abstract notions and conceptions, and to substitute for them the concrete individual, whose essence consists in the effort to persevere in his own being. That which the individual follows is good ; that from which he turns away is evil. Suffering and unrest arise when one tries to realize what he is not, that which is the negation of his true being. The desire which is his essence is then determined, not by itself, but by the influence of external causes ; and thus arises a life of contradiction, of falsehood, and of uncertainty. Then one expects to find the Infinite in the finite, *i.e.*, to discover in the latter satisfying pleasure and happiness. Thus, we imagine the existence of a Providence which is continually employed in providing for our wants; and the disappointments which we experience drive us either to despair or impotent revolt. Not knowing himself, man is not able to know others, and finds himself in conflict with them. Most theologians and philosophers err in seeking to overcome this opposition by subjecting the individual to the constraint of a law; but a law founded upon the false conception of a will which can incline indifferently towards good or evil, opposes itself to our natural feelings as a tyrannical power. It is something external to the individual, and cannot furnish the unity we are seeking. Virtue is not an external end, but rather the effort of the man who arrives through consciousness of himself to full autonomy. It is not, then, by abnegation, but by the complete affirmation of himself, that a man is able to arrive at his true being. We reach the true life by the complete development of all our desires. The tendency to persevere in our own being, must, however, transform itself into the new order of reason. It is through reason that the elements which compose it can be grouped in a stable unity. Reason transforms the inadequate ideas, which arise from external things, into adequate ideas. It substitutes for the relations of sense those of reason, and exhibits in each being the necessity which makes it what it is. Thus, by uniting that which is for sensibility diverse and opposed, reason restores to us, under an intelligible form, those moral beliefs which for most men are necessities of thought.

J. E. C.

Ueber den Begriff der Wissenschaft bei Galilei. A. RIEHL. V. f. w. Ph., XVII, 1, pp. 1–14.

G. not only discovered the correct methods and employed them in his investigations, but he had also the clearest conception of the grounds of this procedure. His method displayed deep and penetrating speculation, but was based upon, and controlled by, experience. Sense experiences are indeed to be taken as the starting point of every scientific investigation, but for further progress the knowledge which the spirit has from itself is not less essential. The most important species of knowledge which the mind derives from itself, is the mathematical, which enables it to advance from the phenomena of sense to a knowledge of their laws. G.'s own discovery, which transformed the methods of acquiring knowledge, consisted in the application of arithmetic to the phenomena of outer nature; and to this even experiment is subordinated. No really valuable knowledge is gained by mere induction. We do not gain a knowledge of laws by comparing the largest possible number of cases, but by a complete analysis of a single case. The task which G. set for science was to explain phenomena not from their causes, but from the law of their causes, or, otherwise expressed, to substitute for the strictly causal explanation, the logical mathematical ground. The object of his investigation was not to discover *what* causes bodies to fall, but *how* they fall. This change in the statement of the problem marks a transition between two ages of science. The means to gain this knowledge of laws (which G. pronounces necessary and universal) is experimental and mathematical analysis, and its criterion is its simplicity. We are also directly conscious of the motives of our own will, and there is a connection here that is as perfectly intelligible as that between reason and consequent. There is thus a group of mental sciences along-side the natural sciences. But it is the height of presumption to suppose that the human mind is capable of understanding fully the workings of nature. There is no single effect of nature which would not transcend the power of the most enlightened mind to comprehend completely. — Science, as G. conceives it, has thus points of relation to the Platonic conception of knowledge. It deals with what is timeless in time, with the unchanging laws of the changeable.

J. E. C.

Essai sur quelques problèmes de philosophie première. F. RAUH. Rev. de Mét., I, 1, pp. 35–62.

An examination of the conditions of knowledge leads to the conclusion that I do not know the primary truth either as a being analogous to me, or as an objective law or notion, but as my intellectual consciousness or pure Ego. There are two degrees of intellectual consciousness, the moral and the logical. In a sense, moral certitude ought to be placed first, but in another sense the two are coördinate. Moral certitude being justified by an analysis of the conditions of knowledge, it is reasonably justified, and not accepted by an act of blind faith. Since the primary truth revealed by an analysis of the conditions of knowledge is my pure Ego, the old metaphysical questions regarding the fundamental truth may be ignored. It is contradictory to ask whether we are the modes of an Eternal Thought or distinct existences. The question before us is simply, When I think, how do things appear to me? Suppress the noumenon, and Kant's system is true. All questions relating to the efficient power of the first truth simply betray ignorance. External nature is not the emanation of something superior, particular existences are not derived from an eternal consciousness. The independence of truth with respect to empirical cognition and its fluctuations, has been substantiated and personified by the old metaphysicians. The fact that others know the intellectual consciousness as well as myself, has also been held to imply that our individual consciousness is the manifestation of a more primary reality. It is true that intellectual consciousness presupposes an existence, but that existence is just the consciousness itself with that 'coefficient of eternity' which all truth bears with it. It is admitted that other beings, and the forms of space and time in which they appear, cannot be derived from my thought; or rather the question is inadmissible, since the whole concept of efficient power (*efficacité*) is contradictory. German philosophy, in its attempt to unite the concepts of nature and moral liberty in the notion of the absolute, substantiated the absolute, instead of simply affirming as true the system of our knowledge. The idea of God is not a positive idea. It is useful in excluding all interpretations of nature which do not consist with the idea of liberty. It is not the idea of another *Being;* another being could not be absolute, as it would require to enter into the series of facts composing the universe. The representation of the intellectual consciousness under the form of a distinct being is less false than insufficient. It is even necessary in a sense to express the independence of truth with respect of my empirical consciousness. So long as it is regarded as a symbolical representation of the truth, it is legitimate. It is also possible to represent the hierarchy of existences, as subordinated one to another and also to an infinite consciousness, which attracts them and to which they tend. Thus, admitting in a particular sense conceptions at first wholly rejected, we get a doctrine that stands midway between Kantianism and the old theology. It excludes 'the thing-in-itself' on the one hand, and on the other all those special questions relating to the nature of God regarded as a separate existence.

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